UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/014,966	12/11/2001	Ming-Chang Liu	80398.P466	6361

7590 08/12/2004	EXAMINER
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ART UNIT	PAPER NUMBER
2613	

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DATE MAILED: 08/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/014,966	LIU ET AL.
	Examiner	Art Unit
	Allen Wong	2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 14-19* is/are rejected.

7)☒ Claim(s) *12 and 13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

DETAILED ACTION

Claim Objections

1.   Claim 13 is objected to because of the following informalities: The term

"video encoder" should be changed to "computer readable medium". Appropriate

correction is required.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to
> be patented and the prior art are such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person having ordinary skill in the art to which
> said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

3.   Claims 1, 2, 5, 6, 8-11, 14, 15, 17 and 19 are rejected under 35 U.S.C.

103(a) as being unpatentable over Smolenski (6,058,140) and McVeigh

(6,574,278).

Regarding claims 1 and 15, Smolenski discloses a computer readable

medium and method for encoding a video sequence comprising the steps of:

executing a first phase of motion estimation, the first phase determining a

set of field motion vectors (fig.7, element 605 is the motion estimation unit that

determines a set of field motion vectors from field data stored in elements 602

and 604); and

using the results of the first phase of motion estimation to execute a 3:2

pulldown detection (col.5, ln.13-16; note a type of 3:2 pulldown detection is done

based on results obtained from element 605).

Although Smolenski does not specifically disclose using scene change detection, however, McVeigh teaches using scene change detection (col.2, ln.35-44; note McVeigh discloses applying motion estimation to gather motion vectors in order to determine scene changes). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the teachings of Smolenski and McVeigh for properly estimating motion vector information data to accurately encode video image data so as to present the best enhanced images for viewing in a robust, financially fiscal manner (McVeigh col.13, ln.13-37).

Regarding claims 2, 8 and 17, Smolenski discloses wherein: the set of field motion vectors is determined between a first frame and a second frame (col.3, ln.12-25); the first frame having a first field and a second field, the second frame having a first field and a second field (col.3, ln.7-9; a frame must have an even field and an odd field, and comparison between two separate frames is done, as noted in col.3, ln.12-25); and the set of field motion vectors comprises a first set of motion vectors between the first field of the first frame and the first field of the second frame and a second set of motion vectors between the second field of the first frame and the second field of the second frame (col.3, ln.65 to col.4, ln.12).

Regarding claims 5 and 19, Smolenski discloses further comprising: . executing a 3:2 pulldown detection (col.5, ln.13-16; note a type of 3:2 pulldown detection is done based on results obtained from element 605); if the 3:2

pulldown detection detects a repeated field, removing the repeated field (col.5, ln.32-36).

Regarding claim 6, Smolenski discloses a video encoder comprising:

a motion detection component having a first phase, the first phase to determine a first and second set of motion vectors (fig.7, element 605 is the motion estimation unit that determines a set of field motion vectors from field data stored in elements 602 and 604);

a 3:2 pulldown detection component (col.5, ln.13-16; note a type of 3:2 pulldown detection is done based on results obtained from element 605);

wherein the motion vectors determined by the first phase are used to execute the 3:2 pulldown detection component (col.5, ln.13-16; note a type of 3:2 pulldown detection is done based on results obtained from element 605).

Smolenski does not specifically teach the scene change detection component and executing scene change detection component. However, MCVEIGH discloses the scene change detection component and executing scene change detection component (col.2, ln.35-44; note McVeigh discloses applying motion estimation to gather motion vectors in order to determine scene changes). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the teachings of Smolenski and McVeigh for properly estimating motion vector information data to accurately encode video image data so as to present the best enhanced images for viewing in a robust, financially feasible manner (McVeigh col.13, ln.13-37).

Regarding claim 9, Smolenski does not specifically disclose wherein the scene change detection component detects a scene change by comparing a ratio of the first and second motion vectors to a threshold. However, McVeigh discloses detects a scene change by comparing a ratio of the first and second motion vectors to a threshold (col.2, ln.32-47; note McVeigh discloses applying motion estimation to gather motion vectors in order to determine scene changes by applying image data comparisons to a threshold). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the teachings of Smolenski and MCVEIGH for properly estimating motion vector information data to accurately encode video image data so as to present the best enhanced images for viewing in a robust, financially feasible manner (McVeigh col.13, ln.13-37).

Regarding claim 10, Smolenski discloses the video encoder of claim 6, wherein the 3:2 pulldown detection component detects a repeated field by comparing a ratio of the first and second motion vectors to a threshold (col.5, ln.32-36; note comparison of the motion vector data, ie. ratios, must be made to sort out the repeated fields from the non-repeated fields).

Regarding claim 11, Smolenski discloses further comprising a 3:2 pulldown undo component to compensate for finding a repeated field (col.5, ln.13-16; note a type of 3:2 pulldown detection is done based on results obtained from element 605; also see col.5, ln.32-36).

Regarding claim 14, Smolenski discloses the video encoder of claim 6, wherein the encoder is embodied in a processor (col.5, ln.23-44; note MPEG-2

video encoder 300 and redundant frame identification circuit 600 must be

processed in a processor).

4.   Claims 3, 4, 7, 16 and 18 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Smolenski (6,058,140) and McVeigh (6,574,278) in view of

Lee (5,638,129).

Regarding claims 3 and 16, Smolenski and McVeigh do not specifically

disclose further comprising executing a second phase of motion estimation.

However, Lee teaches that there is a second phase of motion estimation (fig.2,

note element 214 is a first phase of motion estimation and a second phase of

motion estimation). Therefore it would have been obvious to one of ordinary

skill in the art to combine the teachings of Smolenski, McVeigh, and Lee, as a

whole, for accurately estimating motion vector information data to encode video

image data in an efficient, precise manner so as to display the highest image

quality (Lee col.2, ln.48-53).

Regarding claims 4, 7 and 18, Smolenski and McVeigh do not specifically

disclose wherein executing the second phase of motion estimation further

comprises determining: a third set of motion vectors between the first field of the

first frame and the second field of the second frame; a fourth set of motion

vectors between the second field of the first frame and the first field of the

second frame; and a fifth set of motion vectors between the first frame and the

second frame.   However, Lee discloses obtaining the third, fourth and fifth sets

of motion vectors from frame image data (col.6, ln.15-24 and col.6, ln.36-38).

Therefore it would have been obvious to one of ordinary skill in the art to

combine the teachings of Smolenski, McVeigh, and Lee, as a whole, for

accurately estimating motion vector information data to encode video image

data in an efficient, precise manner so as to display the highest image quality

(Lee col.2, ln.48-53).

Allowable Subject Matter

5.   Claims 12 and 13 are objected to as being dependent upon a rejected

base claim, but would be allowable if rewritten in independent form including all

of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable

subject matter: The prior art does not specifically teach "wherein the 3:2

pulldown undo component compensates for finding a repeated field by replacing

the repeated field with a reference to a field from which the repeated field is

repeated." The prior art also does not specifically teach "wherein the 3:2

pulldown undo component compensates for finding a repeated field by

averaging the repeated field and a field from which the repeated field is

repeated. "

Contact Information

Any inquiry concerning this communication or earlier communications from

the examiner should be directed to Allen Wong whose telephone number is (703)

306-5978. The examiner can normally be reached on Mondays to Thursdays

from 8am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Christopher Kelley can be reached on (703) 305-4856.

The fax phone number for the organization where this application or proceeding

is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from

the Patent Application Information Retrieval (PAIR) system. Status information

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Private PAIR only. For more information about the PAIR system, see http://pair-

direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-

free).

Allen   Wong
Examiner
Art Unit 2613

AW
8/9/04